

Title (en)  
LITHIUM SECONDARY BATTERY

Title (de)  
LITHIUMSEKUNDÄRBATTERIE

Title (fr)  
BATTERIE SECONDAIRE AU LITHIUM

Publication  
**EP 3910716 A4 20220309 (EN)**

Application  
**EP 20778718 A 20200326**

Priority  
• KR 2020004112 W 20200326  
• KR 20190036126 A 20190328

Abstract (en)  
[origin: EP3910716A1] The present invention relates to a lithium secondary battery including a positive electrode including a lithium-nickel-cobalt-manganese-based oxide as a positive electrode active material, a negative electrode including a carbon-based negative electrode active material, a separator interposed between the negative electrode and the positive electrode; and a non-aqueous electrolyte solution containing a lithium salt, an organic solvent, and an additive, wherein the organic solvent includes fluoroethylene carbonate of 10 wt% or greater and ethylene carbonate of 20 wt% or less, the additive includes propene sulfone and lithium fluoromalonate (difluoro) borate, and the driving voltage of the lithium secondary battery is 4.35 V or greater.

IPC 8 full level  
**H01M 10/0567** (2010.01); **H01M 4/525** (2010.01); **H01M 4/587** (2010.01); **H01M 10/0525** (2010.01); **H01M 10/0569** (2010.01)

CPC (source: EP KR US)  
**H01M 4/505** (2013.01 - US); **H01M 4/525** (2013.01 - EP KR US); **H01M 4/583** (2013.01 - US); **H01M 4/587** (2013.01 - EP KR); **H01M 10/0525** (2013.01 - EP KR US); **H01M 10/0567** (2013.01 - EP KR US); **H01M 10/0569** (2013.01 - EP KR US); **H01M 2004/027** (2013.01 - US); **H01M 2004/028** (2013.01 - US); **H01M 2300/0034** (2013.01 - EP KR); **H01M 2300/0037** (2013.01 - US); **H01M 2300/004** (2013.01 - KR); **H01M 2300/0042** (2013.01 - EP KR)

Citation (search report)  
• [A] KR 20130118812 A 20131030 - LG CHEMICAL LTD [KR]  
• [A] US 2014113202 A1 20140424 - SUN XIAO-GUANG [US], et al  
• [A] JP 2017152262 A 20170831 - TOMIYAMA PURE CHEMICAL IND LTD  
• [A] US 2014154590 A1 20140605 - KRAMER ELISABETH [DE], et al  
• See also references of WO 2020197278A1

Designated contracting state (EPC)  
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR

Designated extension state (EPC)  
BA ME

DOCDB simple family (publication)  
**EP 3910716 A1 20211117**; **EP 3910716 A4 20220309**; **EP 3910716 B1 20240501**; CN 113678297 A 20211119; JP 2022519502 A 20220324; JP 7134556 B2 20220912; KR 102463234 B1 20221107; KR 20200114403 A 20201007; US 2022123297 A1 20220421; WO 2020197278 A1 20201001

DOCDB simple family (application)  
**EP 20778718 A 20200326**; CN 202080013566 A 20200326; JP 2021544229 A 20200326; KR 20190036126 A 20190328; KR 2020004112 W 20200326; US 202017431865 A 20200326